NAISN Newsletter

North American Invasive Species Network, 7922 NW 71st Street Gainesville, Florida 32653
www.naisn.org

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The workshop in West Palm Beach, Florida held in March 2010 that led to the formation of NAISN.

ABOUT NAISN

Successful geographically widespread invasive species management programs collaborate, coordinate, and cooperate across all jurisdictional lines. In the mid 2000s, scientists and resource managers began to look at the "big picture" and recognized the need to think like invasive species and work across political boundaries in North America, including public and private lands, if they were to succeed in preventing and managing invasive species and garnering the necessary governmental funding and public support. Unlike lead federal agencies that exist for agricultural invaders, no one lead federal agency in Canada, Mexico, or the United States prevents, manages, researches, and educates the public about invasive species on public conservation lands and in waterways.

In this leadership void, several invasive species centers, institutes, labs, and networks have been established in North America to help meet the needs of public conservation land and waterway resource managers.

Inside this Issue:

By 2009, scientists and resource managers recognized the need to unite and form a national center/network as an umbrella organization to help coordinate the regional centers, institutes, and hubs that exist in North America, as well as the 143 U.S. information systems that contain information on invasive species.

Two workshops were held in 2010 (March and November) to determine how to integrate

these centers, institutes, labs, and networks into a North American Invasive Species Network (NAISN). Scientists, policy makers, resource managers, NGOs, educators, and information specialists from Canada, Mexico, and the U.S. attended these workshops, along with directors from these entities or their representatives.

As a result of the November 2010 workshop, seven invasive species centers, institutes, and one Canadian regional network have agreed to become part of the North American Invasive Species Network either as hubs or nodes. NAISN was established as a non-profit organization that unifies and connects these existing invasive species efforts into a single network resulting in better communication, coordination, collaboration, and cooperation in dealing with the multi-jurisdictional aspects of biological invasions in North America.

In April 2012, the third NAISN workshop developed a five-year business strategic plan. A number of issues were discussed, including strategic objectives, potential demonstration projects, how to market and advertise NAISN services, engaging Native Americans/First Nations/aboriginal peoples, and setting priorities and timelines. This five-year business strategy was developed to guide NAISN during its formative years. The creation and execution of the Network will require rapid learning from initial efforts and the flexibility to adapt to changing conditions.

It is envisioned, as NAISN grows and expands, that the Network will work to enhance information exchange among scientists, government agencies, and private landowners through a comprehensive website similar to the Centers for Disease Control and Prevention (CDC) website and the aggregation of existing databases from the more than 250 databases that contain information of invasive species currently in use worldwide. When funding is available, NAISN will begin to track invasive species expenditures through annual surveys of federal, provincial, state, municipal, and tribal governments and oversee a comprehensive analysis of economic impacts of invasive species. Such information could readily be used by policymakers and elected officials. Finally, NAISN aims to provide "one-stop shopping" for the news media and to develop and implement national public awareness campaigns about invasive species in North America, using successful education and outreach techniques.

NAISN CEC Actions 2011-2013

The Commission for Environmental Cooperation (CEC) facilitates collaboration and public participation to foster conservation, protection, and enhancement of the North American environment for the benefit of present and future generations in the context of increasing economic, trade, and social links among Canada, Mexico, and the United States. In 2011, the CEC provided NAISN seed funds for two years with a primary mandate to coordinate information about non-native invasive species that pose a threat to North American ecosystems and to provide network-based services to mitigate these threats and assist existing organizations and policymakers.

Using the U.S. Centers for Disease Control and Prevention (CDC) as a model, the founding members have worked diligently for the past two years to incorporate and launch NAISN as a truly tri-lateral network. The CEC seed funding to NAISN has been an integral part of this process and has provided indispensable resources throughout the embryonic stages of this effort.

The CEC seed funding in Year 2 was targeted to four main themes: continuing to grow a database framework in GISIN and integrating EDDMaps records within GISIN (over a million new records cached), establishing a web presence (www.naisn.org), facilitating face-to-face and regional meetings, and creating products for advertising and recruitment (NAISN brochure, NAISN video).

In support of these tasks, a range of administrative goals, documents, and processes have been undertaken to permit NAISN to function as a not-for-profit organization with an enhanced capacity to grow, secure funding from new sources, recruit new members, and provide services to diverse user groups. Critical infrastructure has been implemented to address all of these tasks and objectives. A Board of Directors is now firmly established as a productive and functionally- networked team that can begin to implement the goals of the strategic plan over the next 5 years.

NAISN Identifies Ten Essential Core Invasive Species Resource Services

Ten Essential Core Invasive Species Resource Services provide the fundamental framework for cost-effective invasive species management in North America and are used to varying degrees in successful invasive species management programs by government agencies, First Nations governing bodies, and private landowners. These core services provide a working definition of modern invasive species management and a guiding framework for the responsibilities of resource management agencies and private landowners. These services are:

1. **Prevent the introduction** of new or potential invasive species;
2. **Conduct periodic surveillance activities** for early detection of potential invasive species and determine the size of existing biological invasions;
3. **Rapidly respond to new invasions** with quarantine, containment, and eradication activities;
4. **Prioritize management** of existing biological invasions, targeting invasive species that are highly disruptive to native ecosystems and/or causing economic damage. Implement a management program with the goal of achieving "maintenance control" where possible;
5. **Mobilize and participate** in local community partnerships through Cooperative Invasive Species Management Areas (CISMAs) and Cooperative Weed Management Areas (CWMAs);
6. **Inform, educate, and conduct outreach efforts** to help prevent the introduction of invasive species, help early detection of new invaders, provide greater awareness and understanding of damage caused to North America's ecology and economy, and educate the public about why there is a need to manage invasive species;
7. **Support and conduct research** to develop more cost-effective invasive species management methods and better exclusion technology;
8. **Identify, develop, and disseminate information** about best management practices in invasive species surveillance and control efforts;
9. **Provide information technology (IT) services** that support efforts of resource managers and policy-makers related to invasive species prevention,

eradication, control, research, education, and outreach; and,

10. **Evaluate and report the effectiveness** of current invasive species management efforts.

NAISN HUB/NODE News and Info

Note -- NAISN Hubs *are defined as entities (institutions, organizations, or groups) that coordinate invasive species management activities with regional, international, thematic, and/or taxonomically based focus. NAISN* ***Nodes*** *are government agencies or other organizational entities with a recognized role in the management of invasive species. Nodes may be members of a specific Hub or collaborate independently with the NAISN Board of Directors.*

NAISN HUB: Center for Invasive Species & Ecosystem Health (Bugwood) Georgia, USA

Bugwood participated in 102 educational programs pertaining to invasive species identification, mapping, impacts, and control with direct contact with 5,050 individuals in the past year. Educational events included short courses, workshops, webinars, field training sessions, public meetings, and landowner meetings on invasive plants in Georgia; invasive plant mapping, mapping protocols, using EDDMapS at the national level; invasives response to fire and silvicultural operations; use of herbicides; invasive plants in plantations; and history, threat, early detection, and control of cogongrass. This program also develops and delivers educational materials and information to audiences through the web (www.invasive.org). Bugwood received 53,395,829 hits and 14,520,236 page request for information from 6,315,857 unique users.

Smartphone Apps
Bugwood has pioneered the development of invasive species Smartphone apps and currently has 25 invasive species apps for various platforms that received 62,168 iPhone downloads and 13,443 android downloads.

21 - iPhone/iPad and Android Apps

- EDDMapS West
- Mid-Atlantic Early Detection Network
- Outsmart Invasive Species
- Great Lakes Early Detection Network
- Squeal on Pigs
- IPCConnect Lite
- EDDMapS Ontario
- IveGot1 - Identify and Report Invasive Animals and Plants in Florida
- Whats Invasive
- Invasive Plant Atlas of New England
- Southeast Early Detection Network

- National Wildlife Refuge Early Detection Network for New England
- Stink Bug Scout
- Texas Invaders
- Forest Insect Pests in North America
- iBiocontrol - Noxious Weeds and their Biocontrol Agents
- New Jersey Invasive Species Strike Team
- Southeast Agricultural Stink Bug ID
- Georgia Cotton Insect Advisor
- VegDr
- Great Lakes Vegetables
- Invasive Plants in Southern Forests: Identification and Management
- IPCConnect
- National Park Service Invasive Plant Alert

1 - iPhone/iPad, Android and Kindle App

- Landscape Alternatives for Invasive Plants of the Midwest

The National Woodland Owners Association (NWOA) and National Association of University Forest Resources Programs (NAUFRP) announced that the University of Georgia's Center for Invasive Species & Ecosystem Health and Cornell University's ForestConnect Program were the joint winners of the 2013 Family Forest Education Award. NWOA and NAUFRP present this annual award to an educational institution that has delivered the most effective education program that benefits non-industrial forestland owners in the United States.

NAISN Hub: CONABIO Comision Nacional pra el Conocimiento y Uso de la Biodiversidad (CONABIO) Mexico City, Mexico

CONABIO is an Inter-secretarial commission to promote, coordinate, and support activities aimed at increasing awareness of biodiversity and its conservation and sustainable use in Mexico for the benefit of society. CONABIO sponsors basic research regarding biodiversity and makes this research publicly accessible. CONABIO functions as a bridge between academia, government, and society to promote conservation and management of biodiversity. One of the main functions of **CONABIO** is maintaining the National Information System on Biodiversity (NISB), which contains the Invasive Species Information System.

Some recent accomplishments of CONABIO's Invasive Species efforts are: development of the Rapid screening method for exotic species and development of the official list of invasive species of the Ministry of Environment, publication of a book about Invasive Aquatic Species for Mexico (http://www.biodiversidad.gob.mx/especies/Invasoras/noticias.html), and design and launch of a new website on Invasive species for Mexico (www.biodiversidad.gob.mx/invasoras). Conabio is currenly coordinating a GEF-funded project to implement the national invasive species strategy at a national level; the project will run from 2014 to 2018.

NAISN Hub: Center for Aquatic and Invasive Plants (CAIP) Florida, USA

The CAIP is the lead university in Florida evaluating horticultural species for invasive characteristics, conducting the search and evaluation of invasive plant biocontrol agents targeting invasive plants, conducting the screening and evaluation of new herbicides to be used for invasive plant management, evaluating use of mechanical control of aquatic invasive plants, conducting aquatic weed application & certification training courses, and generating predictive assessments for non-native plants.

CAIP also has pioneered the development of educational lessons and activities for use in Florida classrooms (grades 4-12) and a Teacher-training program (PLANT CAMP) along with designing, developing, and maintaining several websites and databases pertaining to invasive non-native plant species.

Because of its expertise, CAIP has rendered national and international assistance in the development of invasive plant management programs outside of Florida.

NAISN Hub: Invasive Species Centre Ontario, Canada

The Invasive Species Centre is a Canadian non-profit organization that brings together scientists, educators, not-for-profit organizations, governments, and industry to undertake collaborative projects in natural and applied science, outreach, and education and policy research to protect Canada's forests, fields, gardens, waterways, and cities from the damaging effects of invasive species.

Since its creation in 2011, the Invasive Species Centre has invested more than 3.3 million CAD in over 145 projects—and leveraged millions more—on new academic and policy research, tools and resources to support monitoring, mapping, and tracking and on campaigns to raise public awareness and provide environmental education. These efforts have resulted in new science on priority invasive species including emerald ash borer and mountain pine beetle, new tools and technologies for rapid detection, response, and mapping, and many outreach and educational materials including guidebooks, best management practices, videos, workshops, and books for teachers and students. The Invasive Species Centre has also led the planning and implementation of events to convene stakeholders and break down institutional barriers, notably the Canadian workshop to discuss the Great Lakes Mississippi Basin Inter-basin Study (April 2014), Terrestrial Invasive Plant Conferences I and II (August 2012 and August 2014), Asian Carp Public Forum (2012), International Conference on Aquatic Invasive Species (April 2013), and Policy Forum (May 2014).

NAISN Node: Invasive Species Council of British Columbia (ISCBC) British Columbia, Canada

The Invasive Species Council of British Columbia works closely with partners including all levels of governments, industry, and non-governmental entities to reduce the impact of invasive species throughout British Columbia. Education and outreach programs focus on changing behavior related to top invasive species pathways such as horticulture, recreation, and transportation. Specialized online resources, phone apps, and webinars all support citizen science public 'spotters' and virtual reporting. Technical workshops and training resources are available for resource managers in forestry, utilities, oil and gas industries, and transportation. Aboriginal and Local Government Toolkits assist in developing invasive species programs and bylaws. ISCBC works closely with partners in BC and beyond, including the Canadian Council on Invasive Species and the Pacific Northwest Economic Region.

NAISN Node: Invasive Species Research Institute (ISRI) Ontario, Canada

ISRI produced **"A guide to the identification and control of exotic invasive species in Ontario's hardwood forests."** This guide focuses on the biology, ecology, and

management of species that invade hardwood forests of Ontario. Detailing species of invasive plants, insects and pathogens, the guide is aimed at a broad audience including academics, students, natural resource managers, woodlot owners, and the general public.

A citizen science project, "**How to build an invasive species management plan for urban centres,"** was funded by the Ontario Trillium Foundation. ISRI recruited and trained volunteers over a 2-year period to survey and map the distribution and abundance of invasive terrestrial plants. A total of 67 maps in Sault Ste. Marie and 8 surrounding communities were created from an outstanding 3,777 observations submitted by volunteers.

NAISN Hub: National Institute of Invasive Species Science (NIISS) Colorado, USA

NIISS provides the backbone of the Global Invasive Species Information Network (GISIN) - a network linking various invasive species databases globally. The GISIN data exchange protocol shares data among databases and serves as the primary data exchange mechanism for NAISN. New entries continue to be submitted by GISIN providers regularly.

Primary services include habitat suitability modeling, species distribution modeling, environmental envelope assessment, future range expansion prediction, and citizen science guidance.

NIISS also supports citizen science efforts by directing and administering the CitSci.org website and support platform (www.citsci.org).

NIISS performed species distribution modeling for invasive *Prosopis juliflora* in Ethiopia and species distribution modeling for western cherry fruit fly. In addition, the institute performed habitat suitability assessments for many invasive species in North America.

NAISN Hub: Texas Invasive Species Institute (TISI) Texas, USA

Nylanderia fulva (Rasberry crazy ant) was originally discovered in Texas in 2002. Although restricted to a few city blocks when discovered, it has since spread to over 28 Texas counties. In addition, it has also moved from urban areas into agricultural settings, is now known to eliminate honey bee colonies, and has moved into pecan orchards.

TISI has monitored the spread and ecological competitiveness of *N. fulva* from its introduction in southeast Houston. TISI is also continuing to work with the pest control industry to identify products that will aid in the management of the Rasberry crazy ant and is currently conducting both laboratory and field based tests on new baits and pesticide sprays. Researchers are also studying the biology of this invasive ant.

In collaboration with the USDA and the Texas Forest Service, TISI has entered into a third year sampling effort for the emerald ash borer beetle. This program is a nationwide program designed to battle this pest of ash trees through early detection, regulation, and public outreach. Although the emerald ash borer has not been detected in Texas, a value-added project has identified and documented the distribution of over 34 additional species of wood-boring beetles in the family Buprestidae from eastern and central Texas. TISI has distributed over 1,000 traps for the 2014 sampling effort.

The Ten Important Invasive Species or Species Assemblages in North America (TENTATIVE)

NAISN has identified the ten important invasive species or species assemblages in North America based on their ability to invade a wide geographic area on public conservation lands and waterways, their ecological and/or economic impacts and/or potential or realized human health impacts (NAISN also recognizes that many other invasive species are locally or regionally important too). NAISN's Top Ten are (in alphabetical order):

Asian Carp Assemblage:
- Bighead carp (*Hypophthalmichthys nobilis*)
- Black carp (*Mylopharyngodon piceus*)
- Common carp (*Cyprinus carpio*)
- Grass carp (*Ctenopharyngodon idella*)
- Silver carp (*Hypophthalmichthys molotrix*)

Burmese python (*Python bivittatus*)
Gypsy moth *(Lymantria dispar)*
Cogongrass *(Imperata cylindrica)*
Emerald ash borer (*Agrilus planipennis*)
Eurasian wild boar (*Sus scrofa*)
Lionfish *(Pterois spp.)*
Hydrilla (*Hydrilla verticillata*)
Mussel Assemblage:
- Quagga Mussels *(Dreissena bugensis)*
- Zebra mussels (*Dreissena polymorpha)*

Salt cedar (*Tamarix spp*.)

North American Invasive Species Network (NAISN)

www.naisn.org

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